

T. A. EDISON.
 PHONOGRAPH OR TALKING MACHINE.
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1,158,661.

Patented Nov. 2, 1915.

Fig. 1

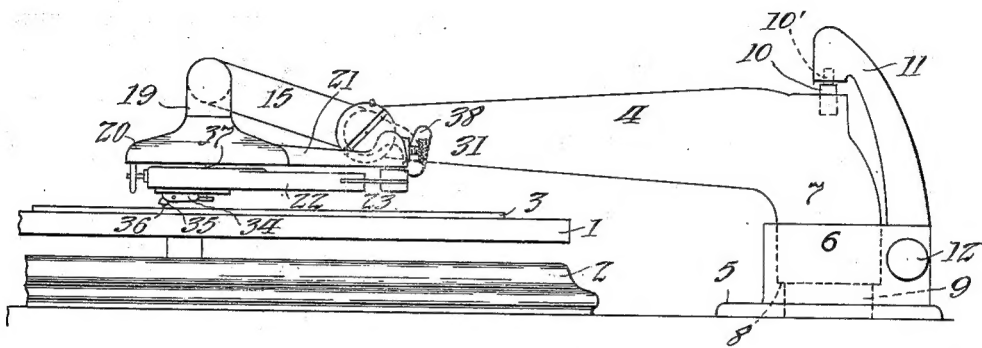
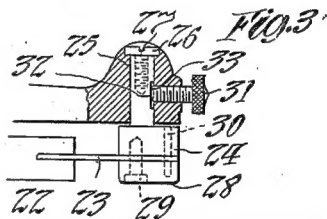
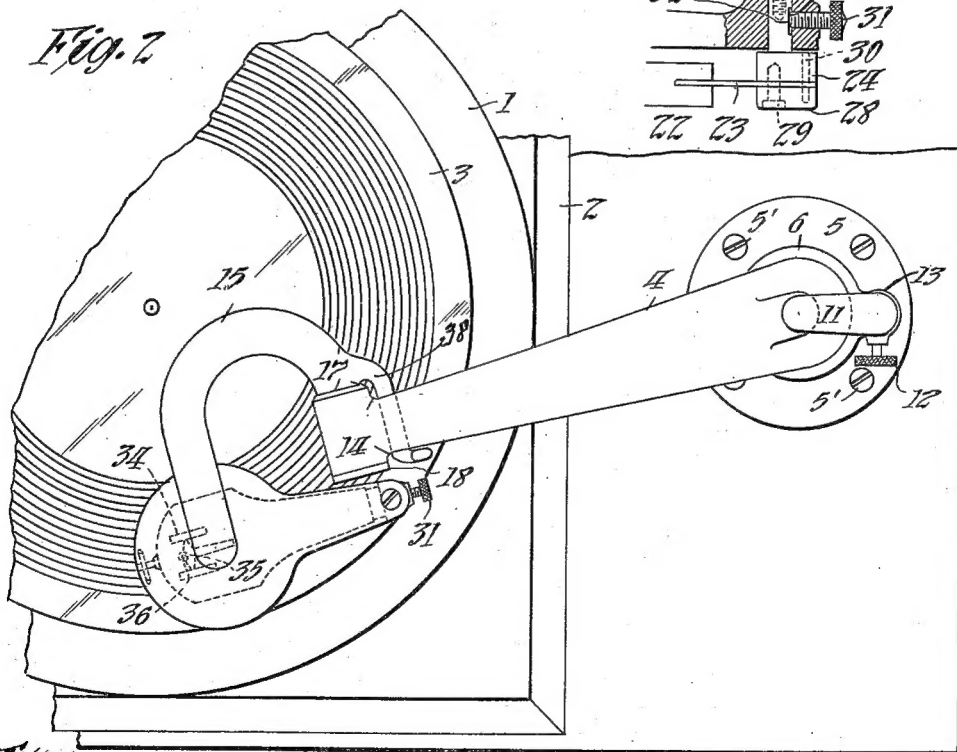


Fig. 2



Witnesses:
 Frank A. Lewis
 Frederick Bachmann

Inventor:
 Thomas A. Edison
 by Frank L. Allen
 His Atty.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, ORANGE, NEW JERSEY, ASSIGNOR TO NEW JERSEY PATENT COMPANY, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PHONOGRAPH OR TALKING-MACHINE.

1,158,661.

Specification of Letters Patent.

Patented Nov. 2, 1915.

Application filed September 16, 1912. Serial No. 720,473.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, and a resident of Llewellyn Park, Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Phonographs or Talking-Machines, of which the following is a description.

My invention relates to phonographs or talking machines, and my principal object is to provide an improved construction whereby reproducers adapted to operate upon sound records having record grooves of the up and down or hill and dale type, and more particularly reproducers provided with floating weights carrying the reproducer styluses, are adapted to be fed across the record surface by the coaction of the reproducer stylus and the record groove.

Another object of my invention is to provide an improved mounting for reproducers of the type specified above whereby they may be readily moved into and out of operative position or held in proper operative position with respect to the record.

Other objects of my invention will appear more fully in the following specification and appended claims.

In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawing forming a part of this specification and in which—

Figure 1 is a side elevation of a portion of a phonograph or talking machine embodying one form of my invention; Fig. 2 is a partial plan view of the same; and Fig. 3 is a view partly in side elevation and partly in section of a detail of construction.

In all of the views like parts are designated by the same reference numerals.

Referring to the drawing, the numeral 1 designates the ordinary rotatable turntable supported above the top 2 of a phonograph or talking machine cabinet of any desired construction and adapted to support a disk sound record 3. The numeral 4 designates a movable tapered sound conveying arm of usual construction, this arm being mounted so as to be capable of free and unrestricted movement only in a direction substantially parallel to the top of the turntable 1 and the upper surface of the record 3.

The mounting of the sound conveying arm 4 herein disclosed comprises a bearing 5 se-

cured, as by means of screws 5' to the top of the talking machine cabinet and provided with a vertical sleeve-like portion 6 within which the downwardly directed portion 7 of the sound conveying arm 4 at the larger end of the said arm is rotatably mounted, the bearing 5 being provided with a shoulder 8 on which the arm 4 is supported against downward movement. The bearing 5 is provided with an opening 9 registering with the outlet in the downwardly directed portion 7 of the arm 4 whereby the said arm may be placed in communication with a sound amplifying horn (not shown). A pivot 10 secured to the top of the arm 4 is provided with a reduced portion 10' rotatably mounted in a bracket 11 co-axially with the sleeve 6, the arm 11 being detachably secured, as by a set screw 12 in the socket 13 formed in the bearing 5. By reason of the above described mounting of the sound conveying arm 4, movement of the latter is practically limited to rotation in a horizontal direction about the axis of the pivot 10 and the sleeve 6. The forward or smaller end of the sound conveying arm 4 is provided with a collar or strap 14 communicating with the said arm, the axis of the said conveyer or strap extending transversely with respect to the axis of the said arm. The collar or strap 14 is adapted to receive and form a bearing or socket for one end of a substantially U-shaped tube or sound conveyer 15 which communicates with the sound conveying arm 3 when the reproducer is in operative position. The tube or sound conveyer 15 is held against axial movement in the collar or strap 14 by a circular flange 17 formed on the said tube or sound conveyer and engaging one end of said collar or strap and by a cap 18 secured upon the end of the said tube in the strap 14 and resting in engagement with the other end of the said strap. The free arm of the U-shaped tube or sound conveyer 15 is downwardly directed as shown at 19 (Fig. 1), the downwardly directed portion of the said arm being rigidly secured to and communicating with the neck of the reproducer.

Excepting the means hereinafter described for holding the floating weight against lateral movement with respect to the reproducer body, the construction of the reproducer herein disclosed is practically the same as

that disclosed in my United States Patent No. 1,055,621, dated March 11, 1913, and entitled reproducers. The said reproducer comprises a sound box 20 supporting the reproducer diaphragm (not shown) and provided with an extension 21 supporting the floating weight 22 by a connection comprising a leaf spring 23 rigidly secured, as by soldering, in a slot in one end of the floating weight and secured at its other end to a member 24 provided with a shank 25 rotatably mounted in the extension 21 of the sound box body. A headed member such as the bolt 26, is threaded in the top of the shank 25 and bears upon the bottom of a recess 27 in the extension 21 to hold the shank 25 against downward movement. A block or equivalent member 28 bearing against the under side of the spring 23 and secured to the member 24, as by a screw 29, serves with the said screw to secure the said spring to the member 24. A pin 30 passing through the member 24 and spring 23 and into the member 28 holds the spring against rotation or lateral movement with respect to the member 24. A set screw 31, or equivalent means is adjustable into engagement with the shank 25 to hold the latter and accordingly also the floating weight against lateral movement with respect to the sound box body. In order that the floating weight may be held in central position by engagement of the screw 31 and the shank 25, I preferably provide the latter with a transversely extending flattened surface 32, preferably a plane surface, adapted to be engaged by the end 33 of the screw 31, the said end of the screw being preferably cupped so as to provide a circular edge lying in one plane and capable of resting flatly against surface 32. The lower surface of the floating weight is provided with bearings 34 spaced a substantial distance apart between which the stylus lever 35 is pivotally mounted, the distance between these bearings being considerable; so that lateral angular movement of the stylus lever in its bearings is reduced to an inappreciable amount. A stylus 36 adapted to engage the record groove of the sound record 3 is firmly secured in one arm of the stylus lever, the other arm being connected, as by connection 37 to the reproducer diaphragm (not shown).

To limit the downward movement of the forward end of the tube or sound conveyer 15 and thereby hold the reproducer in operative position with respect to the record surface, I provide a rigid arm 38 formed on the tube or sound conveyer 15 and extending under and adapted to engage the lower side of the sound conveying arm 4. It is evident that the reproducer may be moved toward and away from the record by adjustment of the tube 15 in its bearing 14; so that records on the turntable 1 may be readily changed. It is also evident that while the tube 15 and

the sound box body 20 are maintained by the stop 38 a fixed distance from the surface of the turntable 1, the floating weight 22 and the reproducer stylus carried thereby are capable of movement toward and away from the said turntable and are thereby permitted to readily follow the irregularities in the record surface.

By clamping the set screw 31 against the surface 32 on the shank 25 to secure the floating weight against lateral movement, the reproducer may be fed across the record surface by the coaction of the reproducer stylus and the walls of the record groove, neither the stylus, the stylus lever, nor the floating weight being movable laterally with respect to the sound box body or the sound conveying arm 4. In the construction shown, the feeding of the reproducer, as just described, causes the conveyer 15 and the arm 4 to be moved with the reproducer in a circular path about the axis of the bearing 5 as a center. If it is desired to dispense with the feeding of the reproducer by the coaction of the reproducer stylus and the record groove and to employ mechanical feeding means, the set screw 31 may be loosened to a suitable extent to permit the reproducer stylus and floating weight to follow the lateral irregularities in the record groove.

Having now described my invention what I claim as new and desire to protect by Letters Patent is as follows:

1. In a phonograph or talking machine, the combination with a reproducer comprising a sound box body, a floating weight mounted thereon, a stylus lever carried by said weight, and a stylus carried by said lever, of a record support, a sound conveying arm connected to said reproducer, said reproducer being movable independently of said sound conveying arm toward and away from said support, and means for limiting the downward movement of said sound box body with respect to said arm and holding the same in operative position with respect to said floating weight and to a record carried by said support, said stylus being arranged to coact with the record groove to feed the reproducer across the record, substantially as described.

2. In a phonograph or talking machine, the combination with a reproducer comprising a sound box body, a floating weight connected thereto, a stylus lever carried by said weight, and a stylus carried by said lever, of a record support, a sound conveying arm having an extremity movable substantially parallel to said support, a connection between said reproducer and said extremity of said sound conveying arm permitting movement of said reproducer relatively to said arm toward and away from said support, and means coacting with said connection and arm for limiting the downward move-

ment of said sound box body with respect to said arm and holding the same in operative position with respect to said floating weight and to a record carried by said support, said stylus being arranged to coact with the record groove to feed the reproducer across the record, substantially as described.

3. In a phonograph or talking machine, the combination with a reproducer comprising a sound box body, a floating weight mounted thereon, a stylus lever carried by said weight and a stylus carried by said lever, of a record support, a sound conveying arm connected to said reproducer and immovable toward and away from said record support during the reproduction of a record, said reproducer being movable independently of said sound conveying arm toward and away from said support, and means for limiting the downward movement of said sound box body with respect to said arm and holding the same in operative position with respect to said floating weight and to a record carried by said support, substantially as described.

4. In a phonograph or talking machine, the combination with a reproducer comprising a sound box body, a floating weight mounted thereon, a stylus lever carried by said weight, and a stylus carried by said lever, of a record support, a sound conveying arm having an extremity movable invariably substantially parallel to said support, a connection between said reproducer and sound conveying arm permitting movement of said reproducer toward and away from said support, and means coacting with said connection and arm for positively limiting the downward movement of said sound box body with respect to said arm and holding the same in operative position with respect to said floating weight and to a record carried by said support, substantially as described.

5. In a phonograph or talking machine, the combination with a reproducer comprising a sound box body, a floating weight mounted thereon, a stylus lever carried by

said weight, and a stylus carried by said lever, of a record support, a sound conveying arm connected to said reproducer and immovable toward and away from said record support during the reproduction of a record, said reproducer being movable independently of said sound conveying arm toward and away from said support, and means for positively limiting the downward movement of said sound box body with respect to said arm and holding the same in operative position with respect to said weight and a record carried by said support, said stylus being immovable laterally with respect to said sound conveying arm, whereby said reproducer is adapted to be fed across the surface of the record by the coaction of the reproducer stylus and the record groove, substantially as described.

6. In a phonograph or talking machine, the combination with a reproducer comprising a sound box body, a floating weight mounted thereon, a stylus lever carried by said weight, and a stylus carried by said lever, of a record support, a sound conveying member having an extremity movable invariably substantially parallel to said support, a sound conveying member connecting said reproducer and said first named sound conveying member and permitting movement of said reproducer toward and away from said support, and means rigid with one of said sound conveying members and arranged to coact with the other of said sound conveying members to limit the downward movement of said sound box body with respect to said first named sound conveying member and to hold the same in operative position with respect to said floating weight and to a record carried by said support, substantially as described.

This specification signed and witnessed this 12th day of September 1912.

THOS. A. EDISON.

Witnesses:

FREDERICK BACHMANN,
MARY J. LAIDLAW.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."